

KRASNZHEN, D.Ye., inzhener; STREL'NIKOVA, A.A., inzhener.

Using recarbonization in the working cycle. Elek.sta. 27 no.
(MLRA 9:10)
8:48-50 Ag '56.
(Condensers (Steam)) (Feed water)

SOV/130-58-9-11/23

AUTHOR:

Krasnozhen, D. Ye.

TITLE:

Operation of Continuous Furnaces with Injection Burners and Low-pressure Burners (Rabota metodicheskikh pechey s inzhektsionnymi gorelkami i s gorelkami nizkogo davleniya)

Metallurg, 1958 3 Nr 9, pp 23 - 25 (USSR) PERIODICAL:

ABSTRACT: The author indicates that best operation of continuous re-heating furnaces is secured when the combustion is completed in the heating zone, the temperature along the zone does not fall, the direct radiation of heat from the heating into the holding zone should be as small as possible. He describes first the operation of a threezone furnace (on the 250 mill) with low-pressure burners and needle recuperators. These burners originally of a design produced by Stal'proyekt were found to be inefficient, the standard fuel consumption in 1954 being 81 - 107.5 kg/ton of sound metal and at a firing mte of 250 - 450 kg/h per m² of active floor area. In 1955, after the burners had been reconstructed, the corresponding figures were 78-76 and 400. The reconstructed burners (Figure 1) had a reduced gas jet exit area and tangential air feed to give

Card 1/2

SOV/130-58-9-11/23

Operation of Continuous Furnaces with Injection Burners and Lowpressure Burners

greater turbulence. Next, the author describes the operation of three-zone continuous furnaces, Nrs 1 and 2, with ceramic recuperators, built to the designs of Stal'-proyekt and provided with Stal'proyekt injection, high-pressure burners. These work well even though the calorific value (1 250-1 300 kcal/m³) has fallen below the design value of 1 600 kcal/m³. The positioning of the burners with respect to their firing rates, however, is, the author states, incorrect and metions that work is proceeding on

increasing the firing rates of some of the burners. There are 2 figures.

ASSOCIATION:

Stalinskiy metallurgicheskiy zavod (Stalino

Metallurgical works

Card 2/2

1. Furnaces--Operation 2. Gas burners--Effectiveness

SOV/130-58-6-8/20

AUTHORS: Krasnozhen, D.Ye., and Moyseyevich, G.I.

TITLE: Operation of Upen-hearth Furnaces with Waste-heat Boilers (Rabota martenovskikh pechey s kotlamiutilizatorami)

PERIODICAL: Metallurg, 1958, Nr 6, pp 17 - 20 (USSR).

At the Staline Metallurgical Works, four open-hearth furnaces are followed by four spiral-tube type waste heat boilers with a heating surface of 575 m each. The boilers have a common separator and superheater (the first example of this in the Soviet Union). The authors describe the design and operation of the boiler system (Figure 1), which works with operation by special pumps to produce steam at 12 atm. forced circulation by special pumps to produce steam at 12 atm. (absolute) and 350 °C. Early experience showed the unsuitability (absolute) and 350 °C. Early experience showed the pressure "Krasnyy kotel shchik" Works), mainly because the actual pressure drop in the boiler was found to be greater than calculated. Some drop in the boiler was found to be greater than calculated. Some improvement was obtained by modifying the system but later these improvement was obtained by modifying the system but later these fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,000 m2/hr at fans were replaced by type D-20 fans rated at 135,0

Card 1/3

SOV/130-58-6-8/20 Operation of Open-hearth Furnaces with Waste-heat Boilers

excessive temperatures developing during reversals.

Appreciable air leaks have been detected (Table 2) and the authors discuss the importance of these and other factors, showing the suction, temperature and composition of the flue gases at various points of the flue system for Nr 3 furnace. They also give (Figure 3) temperatures and suctions for the whole furnace and boiler system for both flow directions. The boilers were cleaned out every third day and also towards the end of each heat. The authors draw the following conclusions from operating experience at the works: fans should have sufficient reserve to secure high furnace productivity as well as efficient heat utilization; furnace construction should be sufficiently solid so as not to be a limiting factor in making use of fan suction; the waste-heat boilers should be separate units and not share separators and superheaters.

There are 3 figures and 2 tables.

Card 2/3

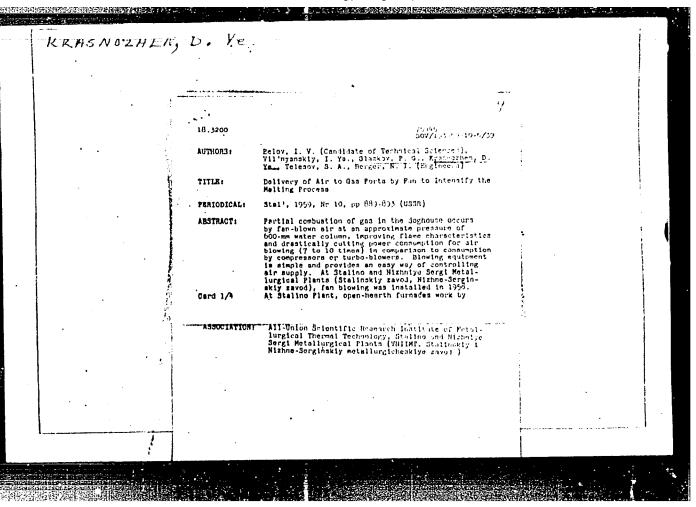
SOV/130-58-6-8/20

Operation of Open-hearth Furnaces with Waste-heat Boilers

Stalinskiy metallurgicheskiy zavod (Stalino Metallurgical works) ASSOCIATION:

1. Open hearth furnaces - Operation 2. Boilers - Design Card 3/3

CIA-RDP86-00513R000826210(APPROVED FOR RELEASE: Monday, July 31, 2000

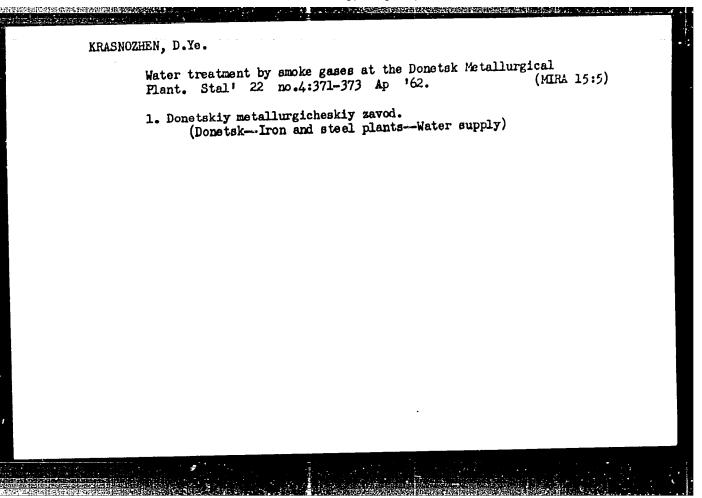


Wes of evaporative cooling of open-hearth furnaces at the Stalino Metallurgical Plant. Trudy WTO chern. met. 20:328-332 '60.

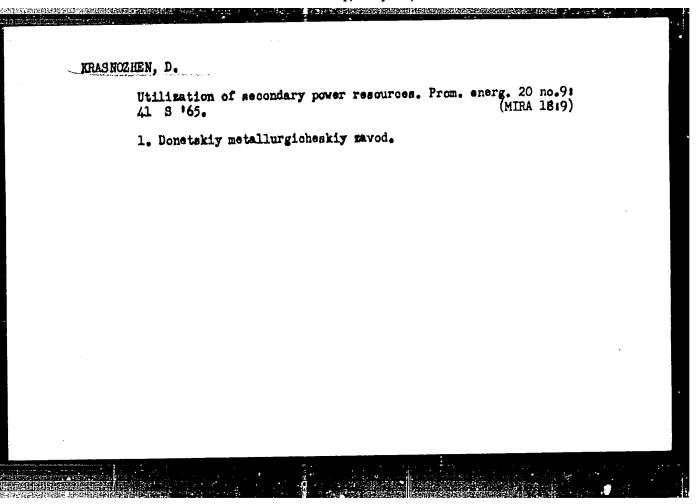
(WIRA 13:10)

1. Stalinskiy metallurgicheskiy savod.

(Stalino (Stalino Province)--Open-hearth furnaces--Cooling)



Treatment of the recirculating water by smoke gases of the gas purification bycle. Metallurg 8 no.3:6-8 Mr '63. (MIRA 16:3) 1. Donetskiy metallurgicheskiy zavod. (Iron and steel plants—Water supply) (Gases—Purification)



New and Improved methods of analysis of milk and milk products. I. Determination of dry matter in milk and whey and motisture in consisture in consistence in cons

MAKAROV, I.P.; KRASNOZHENOV, M.S.; GSTANIN, D.I.

Our methods for the maintenance of tracks with asbestos ballast.
Put'i put. khoz. 7 no.5:18-19 '63. (MIRA 16:7)

1. Chleny Obshchestvennogo konstruktorskogo byuro Ishimskoy distantsii Sverdlovskoy dorogi.
(Railroads---Track) (Ballast (Railroads))

Absorption line profiles in the spectra of novae. Astron.zhur.
37 no.3:589-590 Hy-Je '60. (MIRA 13:6)

1. L'vovskiy gosudarstvennyy universitet imeni Ivana Franko.
(Stars, New-Spectra)

SOV/24-58-6-25/35

AUTHOR:

G.F. Krasnozhon (Moscow)

Calculation of the Formation of Sand Banks of Water TITLE:

Reservoirs (Rashet formirovaniya otmeley vodokhranilishch)

PERIODICAL: Izvestiya akademii nauk SSSR, Otdeleniye tekhnicheskikh

nauk, 1958, Nr 6, pp 126-130 (USSR)

ABSTRACT: After construction of a dam and filling up of a water

reservoir a new regime of currents and wave formation is created which disrupts the conditions of stability of the

This paper is devoted to calculating the banks. equilibrium profile of the reservoir bank which will

ensure for a given wave regime, such conditions of operation which will not result in appreciable disruption

of the banks. Decisive factors in the creation of such banks are the wave regime and the characteristics of the On the basis of physical schemes of refraction

and transformation of waves and the theory of probability it is now possible to calculate the regime of water reservoirs for deep waters, for shallow waters and for

the approach of the waves to the banks. Work on this problem has been published by N. Ye. Kondratyev (Ref 1), Card 1/2

Calculation of the Formation of Sand Banks of Water Reservoirs

J.A. Putnam (Ref 2) and A.P. Braslavskiy (Ref 3). It is easy to determine the characteristics of the soils at the banks of future water reservoirs by investigating those sections for which the calculations are made. The author carries out the calculations for the case of a frontal onflow of the waves. It is shown that N.Ye. Kondrat be over-simplified the problem. For coarse ground soils the bank can be calculated graphically by applying Eq 14 (p 129), sub-dividing the depth into several intervals and determining for each of these the inclination angles from Eq 17 (p 130).

There are 2 figures and 10 references (6 British, 1 French and 3 Soviet)

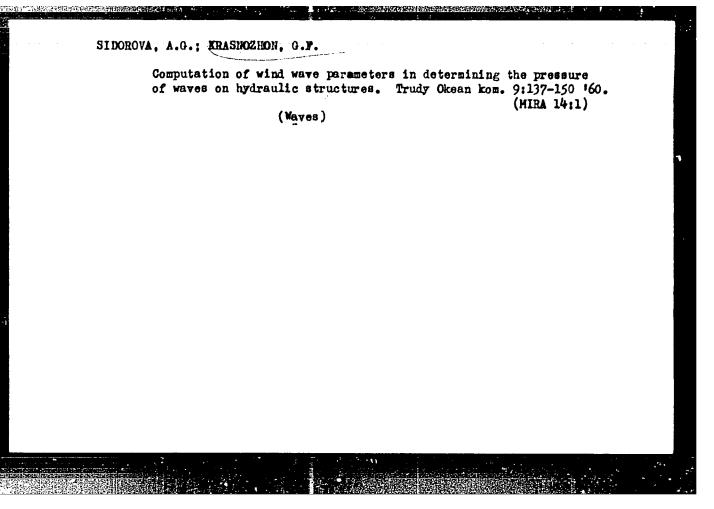
SUBMITTED: October 16, 1956

Card 2/2

DYSHKO, Ye.I., kand. tekhn. nauk, red.; KRASKOZHON, G.F., kand. tekhn. nauk, red.;

[Instructions on designing hydraulic structures subject to wave action] Ukazaniia po proektirovaniiu gidrotekhniche-skikh sooruzhenii, podverzhennykh volnovym vozdeistviiam (SN 288-64). Izd. ofitsial noe. Moskva, Stroiizdat, 1965. 130 p. (MIRA 18:9)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. Gosstroy SSSR (for Dyshko). 3. Sovet po problemam vodnogo khozyaystva AN SSSR (for Krasnozhon).



KRASNOZON, G.F. [Krasnozhon, G.F.], C.Sc.

Calculation of wind waves and off shore shallows of water reservoirs. Vodohosp cas 11 no.1:20-28 163.

1. Akademia vied SSSR, Komisia pre problemy vodneho hospodarstva, Moskva.

_	KRASNUKHIN.	~
1.	- VICE SHINE WAY	1.

- 2. USSR (600)
- 4. Accounting
- 7. Simplified method of compiling the calculation of norms. Bukhg. uchet 12, no. 1, 1953.

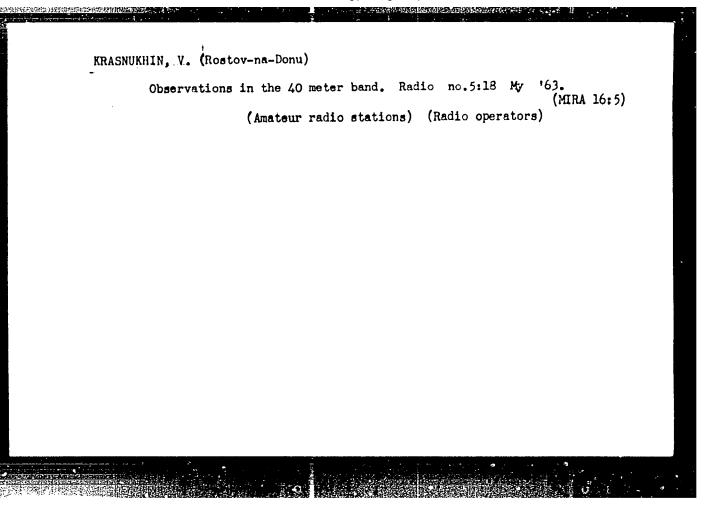
9. Monthly List of Russian Accessions, Library of Congress, May 1953, Unclassified.

KRASNUKHIN, I.

Journal-voucher accounting system. Grazhd.av. 12 no.2:39 P
155. (MIRA 16:1)

1. Glavnyy bukhgalter Glavnogo upravleniya Grazhdanskogo vozdushnogo flota pri Sovete Ministrov SSSR.

(Airlines--Accounting)



Μ.

KRASRUKhin, VI.

USSR/Cultivated Plants - Fodder.

Abs Jour

: Ref Zhur - Biol., No 4, 1958, 15709

Author

: V.I. Krasnukhin

Inst Title

: Sowing Corn for Engilage.

(O poseve kukuruzy na silos).

Oric Pub

: Kukuruza, 1957, No 4, 40-41

Abstract

: It is recommended that various methods of sowing be used: the square cluster at 70 x 70 cm and partially the wide-row sowing with 45 cm space between the rows. The harvest of the plot having the wide rows is made in the cob formation stage, and on the plot with square cluster planting in the milky-waxy ripeness stage, which makes it possible to avoid overcharging the work during the time of ensilage without causing any harm

to the piled up preen stuff.

Card 1/1

KRASNUSHKIN, A.A. Role of innovators in the building of the Kuybyshev Hydroelectric Power Station. Energ.stroi.no.5:46-55 '58. (MIRA 12:5) 1. Sekretar' Partkoma Kuybyshevgidrostroya. (Volga Hydroelectric Power Station)

FADEYEV, A.D., kand. ist. nauk; YAKOVLEVA, A.P.; CHERNYKH, N.S., otv. red.; KALASHNIKOVA, P.I., red.; KOGAN, I.B., red.; KRASNUSHKIN, A.A., red.; CHISTYAKOV, V.P., red.; KOZHEVNIKOVA, V.A., red.; DURASOVA, V.M., tekhn. red.

[The V.I.Lenin Volga Hydroelectric Power Station, 1950-1958] Volzhskaia GES imeni V.I.Lenina (1950-1958 gg); dokumenty i materialy. Kuibyshev, Kuibyshevskoe knizhnoe izd-vo, 1963. 407 p. (MIRA 16:7)

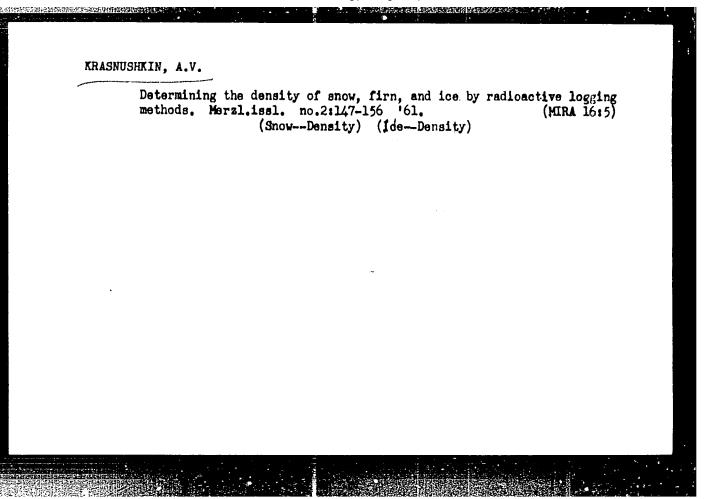
1. Kommunisticheskaya partiya Sovetskogo Soyuza. Kuybyshev-skiy oblastnoy komitet. Partiynyy arkhiv.. 2. Starshiy pre-podavatel' kafedry istorii partii Kuybyshevskogo politekh-nicheskogo instituta (for Fadeyev). 3. Nauchnyy sotrudnik partarkhiva Kuybyshevskogo oblastnovo komiteta Kommunisti-cheskoy partii Sovetskogo Soyuza (for Yakovleva).

(Volga Hydroelectric Power Station (Lenin))

"APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R000826210

K.RASNUSHKIN, A.V.	14-PM	
MEASUREMENTS OF THE AVERAGE NUMBER OF NEU- TRONS EMITTED IN THE FISSION OF SOME URAMIUM AND PLUTONIUM ISOTOPES. PARTS I, II, AND III. V. I. Kelashnikova, A. V. Krasnushkin, V. I. Labedev, L. A. Mikaelyan, M. T. Peverey, P. E. Brvak, and V. P. Zakharovs. P. 123-32 of CONFERENCE OF THE ACADEMY OF SCIENCES OF THE USER ON THE PEACEFUL ISSES OF ATOMIC ENERGY, JULY 1-5, 1955. SESSION OF THE DIVISION OF PHYSICAL AND MATHEMATICAL SCIENCES. (Translation). 10p. This paper was originally sustracted from the Russian and appeared in Nuclear Science Abstracts as NSA 9-7932.		



AM4033674

BOOK EXPLOITATION

S/

Krasnushkin, P. YE., YAblochkin, N. A.

Theory of propagation of superlong waves (Teoriya ras rostraneniya sverkhdlinny*kh voln) 2d ed., unrev. Moscow, VTs AN SSSR, 63. 0093 p. illus., biblio., 2,150 copies printed. (At head of title: Akademiya nauk SSSR. Matematicheskiy institut im. V. A. Steklova) First ed. published in 1955.

Series note: Gosudarstvenny*y soyuzny*y nauchnoissledovatel'skiy institut. Trudy, v. 4, no. 12

TOPIC TAGS: superlong radio waves, surface wave, electric potential, magnetic potential, normal wave, propagation in atmosphere, propagation in ionosphere, near field, far field, daily variation, homogeneous path, irregular path

PURPOSE AND COVERAGE: This is claimed to be the first conscious attempt to match experimental and theoretical data on long-distance propagation of superlong (wavelengths of several times ten kilometers) waves around the earth. Since there is no probability distribution function for the experimental data, the matching is carried out approximately by the method of mixed initial data, where all the data on the field and on the medium are divided into two groups - reliable and

Card 1/3

APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R000826210(

AM4033674

unreliable. Several models are proposed for the propagation along the earth's surface and in the ionosphere with an attempt to include all the geophysical factors which influence the far field of superlong radio waves. Only the waveguide channel adjacent to the earth is considered. The method of normal waves which can be used to solve waveguide propagation problems for sound waves in the ocean, infrasound waves in the atmosphere, seismic waves in the earth, etc. is also developed. The first edition was published in 1956.

TABLE OF CONTENTS [abridged]:

Forework to the second edition - - 5

Literature - - 12

Introduction, present status of theory of propagation of superlong waves - - 13

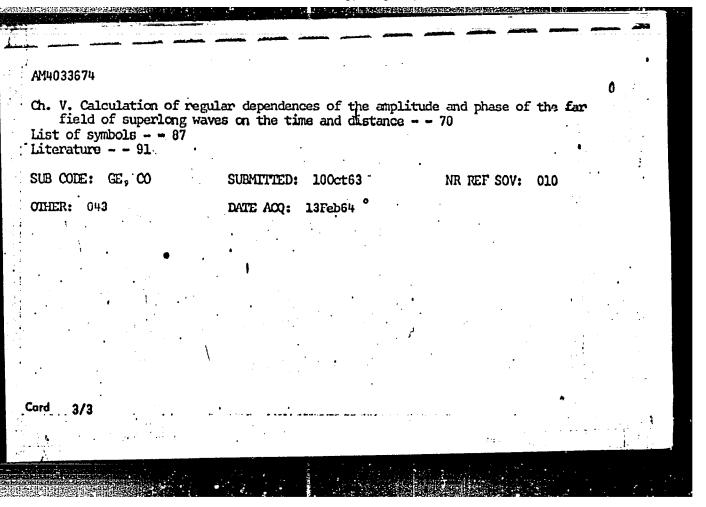
Ch. I. Formulation of problem and choice of model of the medium - - 15

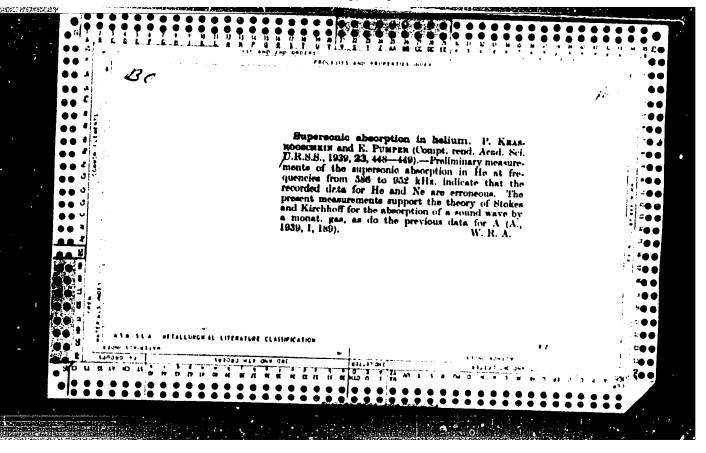
Ch. II. Solution of boundary value problem of propagation of superlong waves on the basis of models B and C - - 21

Ch. III. Introduction of supplementary initial data obtained from measurements of the amplitude and phase of the near field of superlong waves, and the results of the theory on the ionosphere - - 40

Ch. IV. Main characteristics of normal waves of first order - - 55

Card 2/3



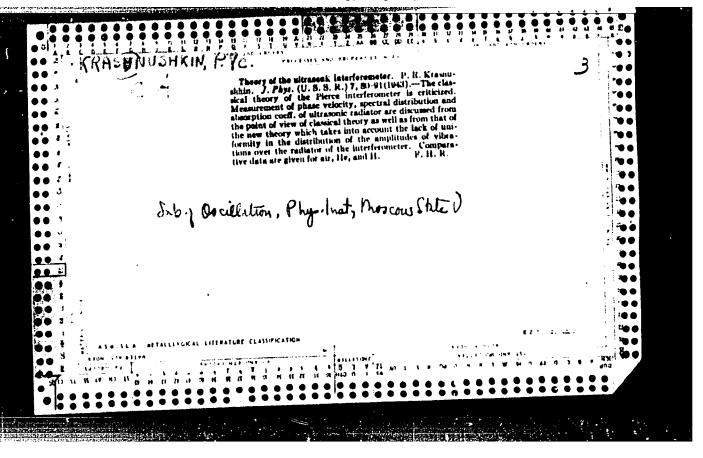


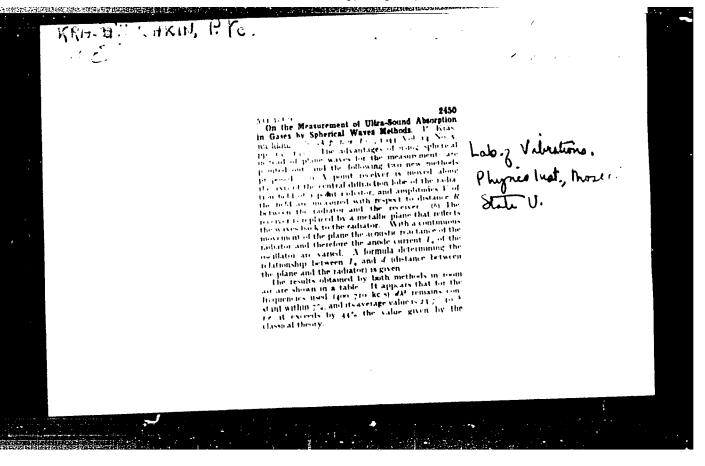
KRASNUSHKIN, P. Ye.

"A Theory of Ultrasonic Interferometer," Dokl. AN SSSR, 27, No.3, 1940
Lab. of Oscillation, Inst. Physics, Moscow State U.

"APPROVED FOR RELEASE: Monday, July 31, 2000

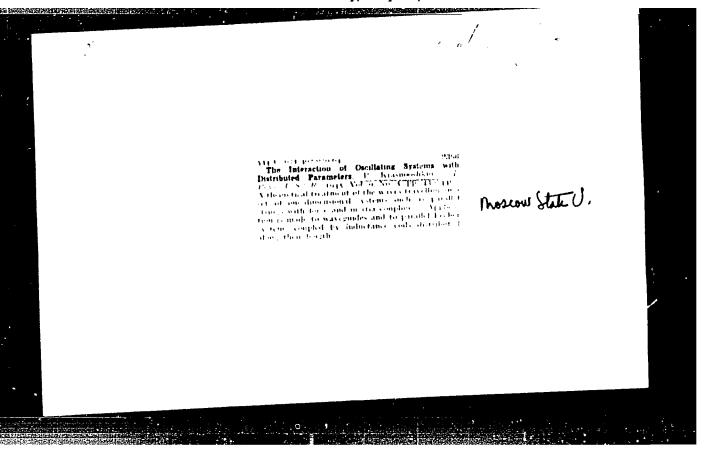
CIA-RDP86-00513R000826210

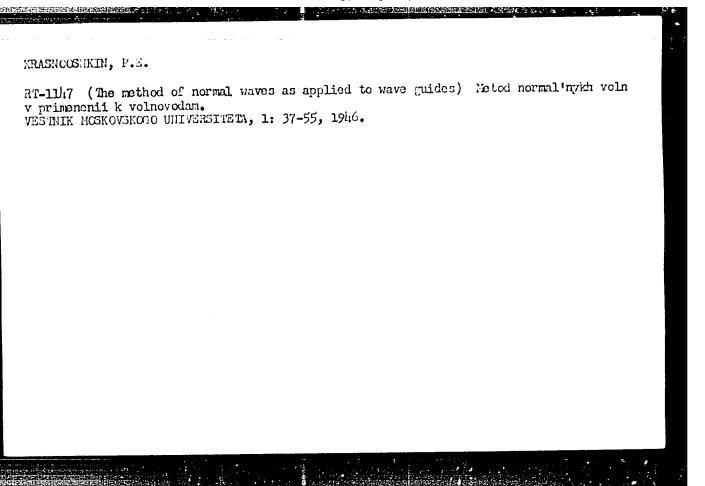


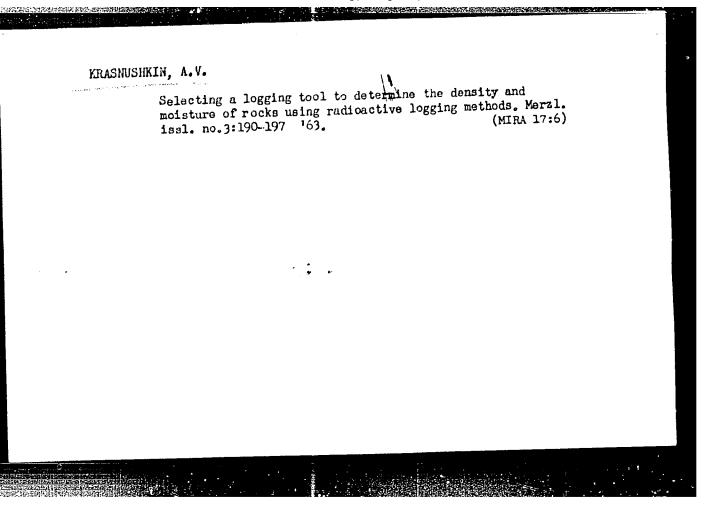


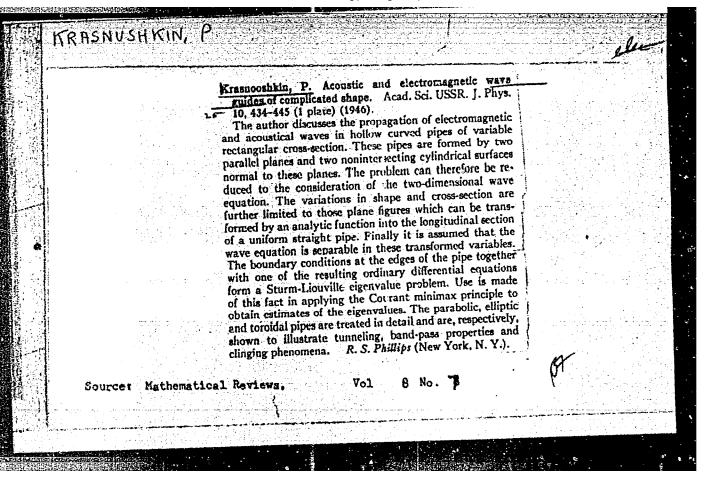
"APPROVED FOR RELEASE: Monday, July 31, 2000

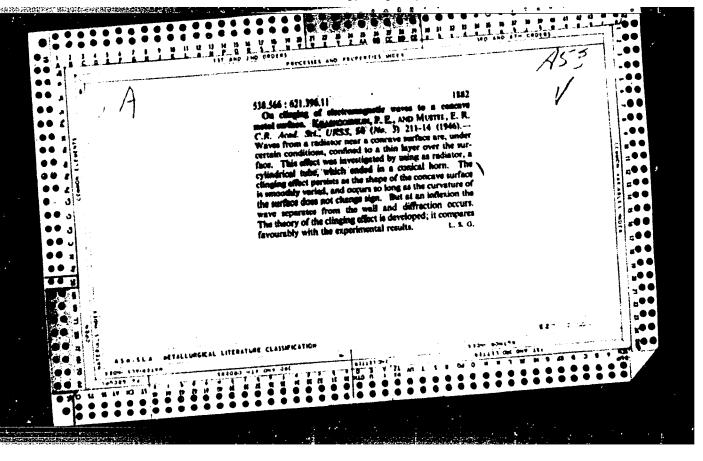
CIA-RDP86-00513R000826210





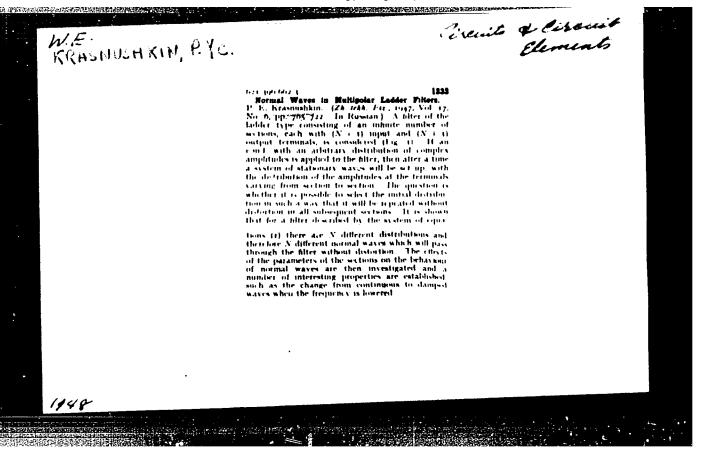






"APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R000826210



KRASNUSHKIN, P

Krasnuškin, P. E. The method of normal waves with an application to plane stratified media. Doklady Akad. Nauk SSSR (N.S.) 56, 687-690 (1947). (Russian)

In this paper there are considered wave phenomena which arise under the action of given currents of density J in an unbounded isotropic nonmagnetic medium, whose dielectric constant ϵ is a function of one coordinate s only. If cylindrical coordinates (r, θ, s) are used, and if it is assumed that the currents are directed along the s-axis and do not depend on the angle θ_s then the wave phenomena are described by the scalar differential equation

(1)
$$\frac{1}{r}\frac{\partial}{\partial r}\left(r\frac{\partial A}{\partial r}\right) + \epsilon k^{2}\frac{\partial}{\partial z}\left(\frac{1}{\epsilon k^{2}}\frac{\partial A}{\partial z}\right) + \epsilon k^{2}A = -(4\pi/\epsilon)J(r,z),$$

where A is the component of the potential vector A_n and k is the wave number. Then A is represented in the form of the spectrum

(2)
$$A = \sum_{i} \varphi_{i}(r) Z_{i}(s) + \int_{i} \varphi(r, X) Z(s, X) dX,$$

where $Z_l(s)$ and Z(s, X) are characteristic functions of the discrete and the continuous parts of the spectrum, and are determined by the equation

(3)
$$\epsilon k \frac{d}{ds} \left(\frac{1}{\epsilon k^2} \frac{dZ}{ds} \right) + \epsilon k^2 Z + XZ = 0$$

Source: Hathematical Roviews,

shown that

1948, Vol

under the conditions that the function Z is single value and continuous. The functions Z are assumed to have been normalized in the usual way. Substituting (2) into (1) and taking into account (3) and the normalization, there result

(4)
$$\frac{d}{dr}\left(\frac{d\varphi}{dr}\right) - Xr\varphi = -\left(4\pi/c\right)rJ(r).$$

where $J(r) = \int J(r, z)Z(z)dz$. The solution $\phi(r)$ of (4) is

$$\varphi(r) = (-ir^*/c) \int_0^n K(r, \rho) \rho J(\rho) d\rho$$

where $K(r, \rho)$ is Green's function given by

In Section 1 inction given by
$$I_{\theta}((-X\rho)^{i})II_{\theta}^{(i)}((-tX)^{i}) \text{ if } r > \rho;$$

$$II_{\theta}^{(i)}(z(-X\rho)^{i})J_{\theta}((-Xr)^{i}) \text{ if } r < \rho;$$
The Bessel's and Mark 1.

It is pointed out that the cases of discrete spectra, namely the cases when the medium has the properties of a wave conductor, ore of special interest. The simplest case is that of a homogeneous layer with e=1, bounded by perfectly conducting planes. It is shown in this paper that any ranhomogeneous medium, with e a continuous function of soaly, possesses the property of a wave conductor whenever the spectrum is discrete. The case of two parallel wave conducting channels is also considered. In this case it is shown that the energy can jump back and forth from one channel to the other.

H. P. Thielman (Ames, Iowa).

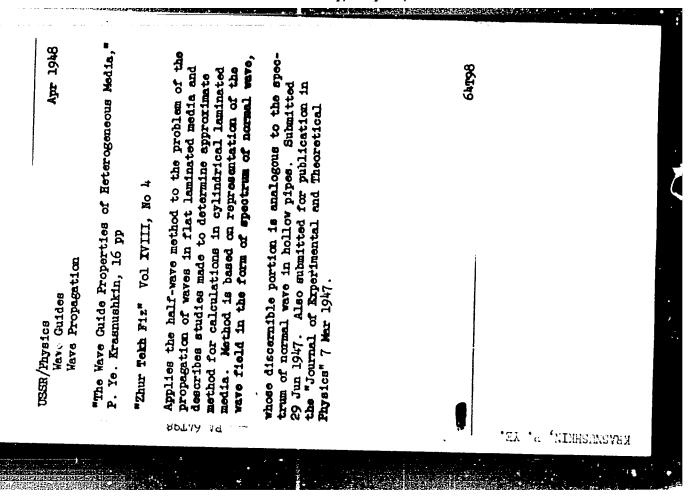
APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R0008262100

No. 4

Research Reviews 1950 Vol 11 Ne. 2 Mer M	KRASNUSHKIN,		
원들은 사용을 보고 있는 것이다. 현재 1일 사용한 문화를 가장하는 것이다. 그는 그는 그는 그는 그는 그는 그는 그를 보고 있다. 그런 그는 그를 보고 있다. 		solutions of the wall tank Moskey. Univ. 3, no. 6, 73-76 (1948). (Russian) In the equation $d^3\phi/dz^2 + W(z)\phi = 0$ let $W(z)$ be an analytic function of s in which s occurs only in the combination e^{iz} , where e is a small positive parameter. In order to solve (1) asymptotically for small e the author transforms (1) into a simpler equation $d^3\psi/dt^2 + P(t)\psi = 0$ by setting $\phi = f\psi$, $dz/dt = f$. The problem of finding $f(z)$ when $P(t)$ is prescribed is solved formally by writing f^i and t as power series in e with indeterminate coefficients that are functions of e^{iz} . Then ϕ is calculated approximately by using only the first terms of these series. No complete discussion of the validity of this procedure is given, but conditions are formulated which guarantee the smallness of the second term in the resulting expression for ϕ . A physical interpretation in terms of wave propagation in nonhomogeneous media is added.	
	Source: Mathemati	보는 19 등에 발표했다. 그리고 있는 19 등이 되었다. 19 등에는 1일 (1984년 1985년 1984년 1985년 1987년 1	

"APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R000826210



KRASNUSHKIN, P. YE.

FA 18/49T108

UBSR/Physics Waves, Electromagnetic Nov 48

"Radiation Through Gaps of Hollow-Space Oscillations as an Analogy of the Tunnel Effect," P. Ye. Krasnushkin, Ye. R. Mustel', 16 pp

"Zhur Tekh Fiz" Vol XVIII, No 11

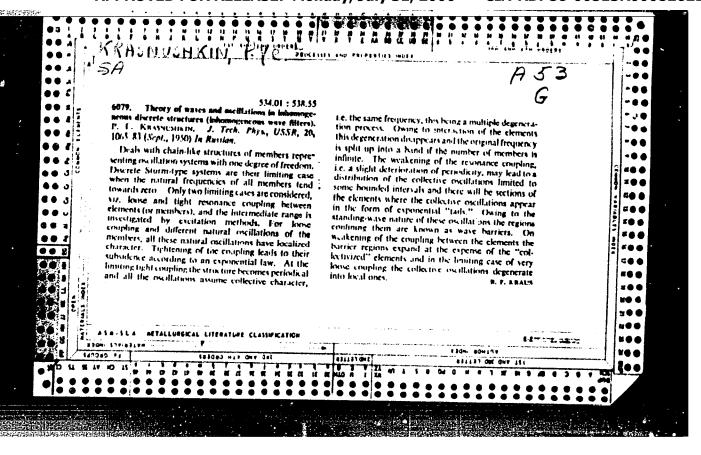
Studies radiation of electromagnetic waves from an interrecess resonator with external gaps across an orifice. Shows that radiation from the resonator can be treated as an analogy of the quantum-mechanics tunnel effect. Theoretical deduction is corroborated by a series of experiments on electromagnetic waves in centimeter band. Submitted 16 Apr 48.

18/49T108

	man managaman merini Merini	
USSR/Electronics Aug 49 Wave Guides	+ - + 2 € • • • • • • • • • • • • • • • • • • •	
"Spatial Pulsations in Connected Wave Guides," P. Ye. Krasnushkin, R. V. Khoklov, 12 pp	•	
"Zhur Tekh Fiz" Vol XIX, No 8		
Theoretically and experimentally investigates spatial pulsations in two semielliptical wave guides connected through a slot. Pulsations		
are due to the resolution, into doublets, of the natural waves in the isolated wave guides when a slot exists.		

"APPROVED FOR RELEASE: Monday, July 31, 2000

CIA-RDP86-00513R000826210



KRASMUSHKIN, P.Ye.; KOLESNIKOV, N.I..

Studying the lower ionosphere with the help of an impedance low-frequency radiosonde. Geomag. i aer. 5 no.1:55-69 Ja-F 165.

(MIRA 18:4)

1. Matematicheskiy institut imeni Stoklova AN SSSR.

BENDRIKOV, G.A.; KHASNUSHKIN, P.Ye.; REYKHRUDEL', E.M.; POTRAKIN, V.V.;

MUSTKL', Ye.R.; RZHEVKIN, K.S.; IVANOV, I.V.; KHAHLAMOV, A.A.;

TIKHONOV, Yu.V.; STREKKOVA, L.P.; KAPTSOV, L.N.; ORDANOVICH, A.Ye.;

KHOKHLOV, R.V.; VORONIN, E.S.; BERESTOVSKIY, G.N.; KRASNOPEVTSEV,

Yu.V.; MINAKOVA, I.I.; YASTREBTSEVA, T.N.; SEMENOV, A.A.; VINO
GRADOVA, M.B.; KARPEYEV, G.A.; DRACHEV, L.A.; TROFIMOVA, N.B.;

SIZOV, V.P.; RZHEVKIN, S.N.; VELIZHANINA, K.A.; NESTEROV, V.S.;

SPIVAK, G.V., red.; NOSYREVA, I.A., red.; GEORGIYEVA, G.I., tekhn.

[Special practical manual in physics] Spetsial nyi fizicheskii praktikum. Moskva, Izd-vo Mosk.univ. Vol.1. [Radiophysics and electronics] Radiofizika i elektronika. 1960. 600 p.

1. Professorsko-prepodavatel skiy sostav otdeleniya radiofiziri fizicheskogo fakul teta Moskovskogo gosudarstvennogo universitata (for all, except Spivak, Nosyreva, Georgiyeva).

(Radioactivity) (Electronics)

BENDRIKOV, G.A.; KHASNUSHKIN, P.Ye.; REYKHRUDEL', E.M.; POTEMKIN, V.V.;

MUSTEL', Ye.R.; RZHEVKIN, K.S.; IYANOV, I.V.; KHARLAMOV, A.A.;

TIKHONOV, Yu.V.; STRELKOVA, L.P.; KAPTSOV, L.N.; ORDANOVICH,

A.Ye.; KHOKHLOV, R.V.; VORONIN, E.S.; BERESTOVSKIY, G.N.; KRASNOPEVTSKV, Yu.V.; MINAKOVA, I.I.; YASTREBTSEVA, T.N.; SEMENOV, A.A.;

VINOGRADOVA, M.B.; KARPEYEV, G.A.; DRACHEV, L.A.; TROFIMOVA, N.B.;

SIZOV, V.P.; RZHEVKIN, S.N.; VELIZHANINA, K.A.; NESTEROV, V.S.;

SPIVAK, G.V., red.; NOSYREVA, I.A., red.; GEORGIYEVA, G.I., tekhn.

[Special physics practicum] Spetsiel'nyi fizicheskii praktikum.

Moskva, Izd-vo Mosk, univ. Vol.1. [Radio physics and electronics]

Radiofizika i elektronika. Sost. pod red. G.V. Spivaka. 1960.

600 p.

1. Professorsko-prepodavatel'skiy kollektiv fizicheskogo fakul'teta Moskovskogo universiteta im. M.V.Lomonosova (for all except Spivak, Nosyreva, Georgiyeva).

(Radio) (Electronics)

24046 8/020/61/138/004/006/023 B104/B203

9,9000

Krasnushkin, P. Ye.

TITLE:

AUTHOR:

The boundary problem of the propagation of electromagnetic waves in a spherically laminated, anisotropic, dissipative medium

PERIODICAL:

Akademiya nauk SSSR. Doklady, v. 138, no. 4, 1961, 813-816

TEXT: In previous papers (Doktorskaya dissertatsiya, Izd. MGU, 1945; Metod normalnykh voln v primenenii k probleme del'nykh svyasey (Method of normal waves applied to problems of long-distance dommunications) Izd. MGU, 1947; DAN, 56, no. 7), the author had published the method of normal waves. Here, he studies a general case in direct relation to the semiconducting terrestrial globe surrounded by the magneto-anisotropic ionosphere. This case includes Watson's problem (G. N. Watson, Proc. Roy. Soc. 95a, 83 (1918)) and its accustic and seismological analogies. The author assumes a steady electromagnetic field of the frequency ω (in spherical coordinates) which generates the current densities

 $I_{n}(r, 0)e^{-i\omega t}$; $I_{n} = I_{\psi} = 0$.

Card 1/6

24046

S/020/61/138/004/006/023 B104/B203

The boundary problem of the propagation ...

The medium is defined by the tensor of the dielectric constant

$$\|\mathbf{s}_{h}\| = \begin{bmatrix} \mathbf{s}_{f}^{h}, & 0 & 0 \\ 0 & \mathbf{s}_{i0}^{h} & \mathbf{s}_{j0}^{h} \\ 0 & -\mathbf{s}_{i0}^{h} & \mathbf{s}_{i0}^{h} \end{bmatrix}, \quad k = 0, 1, 2, \dots, N.$$
 (2)

and the components of the field satisfy the Maxwell equations

$$\frac{1}{r \sin \theta} \frac{\partial}{\partial \theta} (\sin \theta H_{\phi}^{h}) = -\frac{i\omega}{c} e_{rr}^{h} E_{r}^{h} + \frac{4\pi}{c} I_{r}; \qquad \frac{1}{r \sin \theta} \frac{\partial}{\partial \theta} (\sin \theta \cdot E_{\phi}^{h}) = \frac{i\omega}{c} H_{r}^{h};$$

$$\frac{1}{r} \frac{\partial}{\partial r} (rH_{\phi}^{h}) = \frac{i\omega}{c} [e_{\phi\phi}^{h} E_{\theta}^{h} + e_{\phi\phi}^{h} E_{\phi}^{h}]; \qquad -\frac{1}{r} \frac{\partial}{\partial r} (rE_{\phi}^{h}) = \frac{i\omega}{c} H_{\phi}^{h};$$

$$\frac{1}{r} \left[\frac{\partial}{\partial r} (rH_{\phi}^{h}) - \frac{\partial H_{r}^{h}}{\partial \theta} \right] = \frac{i\omega}{c} [e_{\phi\phi}^{h} E_{\theta} - e_{\phi\phi}^{h} E_{\phi}^{h}];$$

$$\frac{1}{r} \left[\frac{\partial}{\partial r} (rE_{\phi}^{h}) - \frac{\partial H_{r}^{h}}{\partial \theta} \right] = \frac{i\omega}{c} H_{\phi}^{h}.$$
(3)

At the boundaries of layers, he assumes steadiness of the tangential components of the field. This problem is represented as an operator

Card 2/6

24045

The boundary problem of the propagation...

S/020/61/138/004/006/023 B104/B203

problem. For this purpose, the author introduces the vector function $\begin{bmatrix} B(r, \theta) \\ A(r, \theta) \end{bmatrix}$, where $E_{\phi} = \frac{1}{r} \frac{\partial A}{\partial \theta}$; $H_{\phi} = \frac{1}{r} \frac{\partial B}{\partial \theta}$. Thus, (3) can be written down in the matrix form

$$t_r^{(h)} \begin{vmatrix} B_h \\ A_h \end{vmatrix} + t_0^{(h)} \begin{vmatrix} B_h \\ A_h \end{vmatrix} = \frac{4\pi}{c} r^2 \begin{vmatrix} I_r \\ 0 \end{vmatrix}, \quad k = 0, 1, 2, ..., N, \quad (A)$$

where

$$l_r^{(h)} = \begin{vmatrix} \epsilon_{rr}^h r^3 \frac{\partial}{\partial r} \left[\frac{1}{\epsilon_{00}^h} \cdot \right] + k_0^2 \epsilon_{rr}^h r^2 \cdot ; & -ik_0 \epsilon_{rr}^h r^2 \frac{\partial}{\partial r} \left[\frac{\epsilon_{00}^h}{\epsilon_{00}^h} \cdot \right] \\ \frac{ik_0 \epsilon_{00}^h}{\epsilon_{00}^h} r^2 \frac{\partial}{\partial r} \cdot ; & r^2 \frac{\partial^2}{\partial r^2} \cdot + k_0^2 r^2 \left[\epsilon_{00}^h + \frac{(\epsilon_{00}^h)^3}{\epsilon_{00}^h} \right] \\ l_0^h = \begin{vmatrix} \mathcal{Z} \cdot ; & 0 \\ 0; & \mathcal{Z} \cdot \end{vmatrix}, & \text{rge } \mathcal{Z} = \frac{1}{\sin \theta} \frac{\partial}{\partial \theta} \left(\sin \theta \frac{\partial}{\partial \theta} \cdot \right). \end{cases}$$
 (6)

The corresponding boundary problem is obtained in the form of the inhomo-The corresponding boundaries geneous operator equation $L_r \begin{vmatrix} B \\ A \end{vmatrix} + L_0 \begin{vmatrix} B \\ A \end{vmatrix} = \frac{4\pi}{c} r^2 \begin{vmatrix} I_r \\ A \end{vmatrix}$

24046 \$/020/61/138/004/006/023 B104/B203

The boundary problem of the propagation...

With the use of methods developed by the author in previous papers, he represents the solution of (10) with the aid of a theorem by M. V. Keldysh (DAN, 77, 11, (1951)) in the form

$$\begin{vmatrix} B \\ A \end{vmatrix} = \sum_{j=0}^{\infty} \begin{vmatrix} Y_j(\mathbf{r}) \\ Z_j(\mathbf{r}) \end{vmatrix} \Phi_j(\theta) \qquad (12).$$
Therefore, the obtains a second state of the state of

With the aid of the Green function, he obtains a general solution which may

$$\begin{vmatrix} B \\ A \end{vmatrix} = -\frac{\pi P}{cb^3} \sum_{j=0}^{\infty} \begin{vmatrix} Y_j(r) \\ Z_j(r) \end{vmatrix} \frac{Y_j(b)}{N_j \sin v_j \pi} P_{v_j} [\cos (\pi - \theta)], \tag{14'}$$

for the case where the field is excited by a Hertzian dipole in the point $\theta=0,\ r=b$. P is the electric moment of the Hertzian dipole. If P_{ν} is decomposed into the sum $\frac{1}{\pi i} \left\{ L_{\nu,j}^{(1)} \left[\cos(\pi-\theta) \right] - L_{\nu,j}^{(2)} \left[\cos(\pi-\theta) \right] \right\}$, and the asymptotic representation

$$L_{\nu_{j}}^{(1,2)} = Q_{\nu_{j}} \pm i \frac{\pi}{2} P_{\nu_{j}} \sim \sqrt{\frac{\pi}{2\nu_{j} \sin \theta}} e^{\pm i \left[\nu_{j}\right] \cdot \theta + \pi/4}; \quad \nu^{\circ} = \nu + \frac{1}{2},$$

Card 4/6

2401:6 \$/020/61/138/004/006/023 B104/B203

The boundary problem of the propagation...

is used, then (14') may be represented in the form

$$\begin{vmatrix} B \\ A \end{vmatrix} = \frac{2P}{cb^2} \sqrt{\frac{\pi}{2\sin\theta}} \sum_{j=0}^{\infty} \begin{vmatrix} Y_j(r) \\ Z_j(r) \end{vmatrix} \frac{Y_j(b) v_j^{-1/2}}{N_j} \left\{ \sum_{n=0}^{\infty} e^{i(n+1)\frac{2\pi v_j - i(v_j + 0 + \pi/4)}{2\pi v_j - i(v_j + 0 + \pi/4)}} + e^{i2\pi n v_j + i(v_j + 0 + \pi/4)} \right\},$$
(15)

where $1/\sin v_j\pi$ is expanded in a geometrical series. Each term of (15) is a normal wave traveling along the layers $\|\epsilon\| = \mathrm{const}$, and is characterized by the wave number α_j and the damping coefficient β_j . The relation $v_j^* = \alpha_j + i\beta_j = \sqrt{\lambda_j} + 1/4$ holds for these quantities. Finally, it is shown that a noticeable reflection occurs at the boundaries of the first interval if the dielectric constant changes slowly in the intervals (r_i, r_{i+1}) and strongly in the intervals (r_{i+1}, r_{i+2}) $(i=0, 2, 4, 6, \ldots)$. The solution of this problem is briefly discussed. There are 5 references: 4 Sovietbloc and 1 non-Soviet-bloc.

Card 5/6

24046

5/020/61/138/004/006/023 The boundary problem of the propagation...

B104/B203

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk

SSSR (Institute of Mathematics imeni V. A. Steklov of the

Academy of Sciences USSR)

PRESENTED:

January 9, 1961, by N. N. Bogolyubov, Academician

SUBMITTED:

January 5, 1961

Card 6/6

25308

S/020/61/138/005/008/025 B104/B205

AUTHOR:

Krasnushkin, P. Ye.

TITLE:

Solution of the boundary problem for the propagation of radio waves around the earth with regard to fundamental geo-

physical factors

PERIODICAL: Akade

Akademiya nauk SSSR. Doklady, v. 138, no. 5, 1961, 1055-1058

TEXT: The problem under consideration consists in applying the solutions obtained by the author in a previous paper (DAN, 138, 4, 1961). Here, a medium is assumed, which is composed of three spherical layers. The zerotlayer is the Earth (0 $\langle r \langle a \rangle$) which is given by $\varepsilon_{rr} = \varepsilon_{\theta\theta} = \varepsilon_{\phi\phi} = \varepsilon_0' + i \cdot 4\pi\sigma_0/\omega$, where ε_0' and the conductivity σ_0 do not depend on r, and $\varepsilon_{\theta\phi} = 0$. The first layer is assumed to be an ideal atmosphere (a $\langle r \langle c \rangle$); $\varepsilon_{rr} = \varepsilon_{\theta\theta} = \varepsilon_{\phi\phi} = 1$, $\varepsilon_{\theta\phi} = 0$. The second layer (c $\langle r \langle c \rangle$) is the ionosphere which is considered to be an electron-ion plasma situated in a vertical magnetic field E_0 and characterized by the

Card 1/7

Solution of the boundary problem ...

S/020/61/138/005/008/025 B104/B205

electron concentration N $_{\theta}(r)$ and the collision frequency $v_{eff}(r)$ of electrons with other particles. The tensor components of the dielectric constant are written for the case wherein only the motion of electrons is taken into account and the compressibility of the plasma may be neglected. The problem under consideration consists in finding steady solutions for the Maxwell equations in r = 0, r = a, r = c, and $r = \infty$ under the corresponding conditions. The author assumes that χ has no continuous spectrum, and that no waves come from the center at r = 0. On the basis of the previous paper mentioned above, the author gives the operator $L_{\mathbf{r}}$ for normal waves of the case in question. The solutions of these operator equations for the layers 0 and 1 are expressed by means of linear combinations of the spherical Bessel functions $h_{\nu}^{(1)}(\varrho) = \sqrt{\frac{\pi\varrho}{2}H_{\nu}^{(1)}(\varrho)}$ and $h_{\nu}^{(2)}(\varrho) = \sqrt{\frac{\pi\varrho}{2}H_{\nu}^{(2)}(\varrho)}$. The author obtains $Y^{(1)} = C_1 \left\{ D_{\gamma}(r,a') - Z_y D_{\gamma}(r,a) \right\} = C_1 \overline{D_{\gamma}(r,a')}$

 $Z^{(1)} = C_2 \left\{ \frac{1}{Z_2} D_{\nu}(r, a') - D_{\nu}(r, a) \right\} = C_2 \overline{D_{\nu}(r, a)}$ (7), where

Card 2/7

Solution of the boundary problem 306

S/020/61/138/005/008/025 B104/B205

 $Z_{y} = h_{v}^{(2)}(k\sqrt{\epsilon_{0}}a)/\sqrt{\epsilon_{0}}h_{v}^{(2)}(k\sqrt{\epsilon_{0}}a), \ Z_{z} = \sqrt{\epsilon_{0}}h_{v}^{(2)}(k\sqrt{\epsilon_{0}}a)/h_{v}^{(2)}(k\sqrt{\epsilon_{0}}a) \ \text{are the impedances of the earth for vertically } (Z_{y}) \ \text{and horizontally } (Z_{z}) \ \text{polarized}$ spherical waves, and where

$$D_{\nu}(x, y) = \frac{i}{2} \begin{vmatrix} h_{\nu}^{(1)}(kx) & h_{\nu}^{(2)}(kx) \\ h_{\nu}^{(1)}(ky) & h_{\nu}^{(2)}(ky) \end{vmatrix}; \quad D_{\nu}(x, y') = \frac{i}{2} \begin{vmatrix} h_{\nu}^{(1)}(kx) & h_{\nu}^{(2)}(kx) \\ h_{\nu}^{(1)}(ky) & h_{\nu}^{(2)}(ky) \end{vmatrix};$$

$$D_{\nu}(x',y) = \frac{i}{2} \begin{vmatrix} \dot{h}_{\nu}^{(1)}(kx) & \dot{h}_{\nu}^{(2)}(kx) \\ \dot{h}_{\nu}^{(1)}(ky) & \dot{h}_{\nu}^{(2)}(ky) \end{vmatrix}; D_{\nu}(x',y') = \frac{i}{2} \begin{vmatrix} \dot{h}_{\nu}^{(1)}(kx) & \dot{h}_{\nu}^{(2)}(kx) \\ \dot{h}_{\nu}^{(1)}(ky) & \dot{h}_{\nu}^{(2)}(ky) \end{vmatrix}.$$
 (5)

holds for D_{ν} . In layer 2 there exist four independent solutions. In the range r>d they may be represented as traveling waves in the directions . 0 and $r\longrightarrow\infty$: as ordinary and extraordinary waves. The solutions read: $Y^{(2)}(r,\chi) = C_3 Y_e(r,\chi) + C_4 Y_o(r,\chi)$

 $Z^{(2)}(r,\chi) = C_3 Z_e(r,\chi) + C_4 Z_o(r,\chi)$ (9). Subscript o refers to ordinary

Card 3/7

Solution of the boundary problem ...

S/020/61/138/005/008/025 B104/B205 .

waves, and subscript e to extraordinary waves. Concrete forms of (8) and (9) for arbitrary functions $N_e(r)$ and v(r), in a region where both waves interact, have been obtained by numerical integration on a computer. If proper conditions are chosen for the point $r_1 = c$, the representation of (6), (7), and (8), (9) in eigenfunctions of the operator L_r will yield equations for the calculation of C_1 , C_2 , C_3 , and C_4 . The condition of compatibility of these equations can be written in the form

$$\left[k\overline{D_{\mathbf{v}_{j}}(a',c')}-I_{y}^{e}\overline{D_{\mathbf{v}_{j}}(a',c)}\right]\left[k\overline{D_{\mathbf{v}_{j}}(a,c')}-I_{z}^{o}\overline{D_{\mathbf{v}_{j}}(a,c)}\right]-\\
-\frac{\kappa^{e}}{\kappa^{o}}\left[k\overline{D_{\mathbf{v}_{j}}(a',c)}-I_{y}^{o}\overline{D_{\mathbf{v}_{j}}(a',c)}\right]\left[k\overline{D_{\mathbf{v}_{j}}(a,c')}-I_{z}^{e}\overline{D_{\mathbf{v}_{j}}(a,c)}\right]=0,$$
(10)

with the notation

$$l_y^{\epsilon} = (\widetilde{Y}_{\epsilon}/Y_{\epsilon})_{r=\epsilon}, \quad l_z^{\epsilon} = (Z_{\epsilon}/Z_{\epsilon})_{r=\epsilon}, \quad \times^{\epsilon} = (Z_{\epsilon}/Y_{\epsilon})_{r=\epsilon}.$$

 $I_{\nu}^{\circ} = (\widetilde{Y}_{o}/Y_{o})_{r=c}, \quad I_{z}^{\circ} = (Z_{o}/Z_{o})_{r=c}, \quad \times^{o} = (Z_{o}/Y_{o})_{r=c}.$

Card 4/7

25308 Solution of the boundary problem ...

S/020/61/138/005/008/025 B104/B205

 I_1^k are the wave impedances, and κ^k the polarization coefficients of the respective waves at the boundary r=c. These six quantities are functions of χ , and determine the reflection properties of layer'2 completely. Along with Z_y and Z_z , they determine all parameters v_j , N_j , and w_j of normal waves. The wave numbers v_j are roots of the transcendental equations (10), and the coefficients κ_j can be obtained from

$$\varkappa_{I} = k \varkappa^{a} \frac{I_{z}^{a} - I_{z}^{o}}{I_{y}^{a} - I_{y}^{o}} \frac{k \overline{D_{v_{I}}(c', a')} - I_{y}^{o} \overline{D_{v_{I}}(c, a')}}{k \overline{D_{v_{I}}(c', a)} - I_{z}^{o} \overline{D_{v_{I}}(c, a)}}.$$
(12).

The latter relation was determined from the boundary conditions on the boundaries of the layer. The normalization factor N, can be represented in

the form
$$N_j = C_1^2 \frac{\overline{D_{vj}(a',c)}}{2v_j + 1} \left[\frac{\partial z(v)}{\partial v}\right]_{v-v_j}$$
, where $f(v)$ is the left-hand side of

Card 5/7

Solution of the boundary problem 500.

S/020/61/138/005/008/025 B104/B205

Eq. (10). Thus, it is possible to represent the expressions for the potentials B and A, indicated in the previous paper by (14'), in the form

$$B = -\frac{\pi P}{cb^4} \sum_{j=0}^{\infty} \frac{\overline{D_{\mathbf{v}_j}(r, \mathbf{a}')} \overline{D_{\mathbf{v}_j}(b, \mathbf{a}')} (2\mathbf{v}_j + 1)}{\sin \mathbf{v}_j \pi \cdot \overline{D_{\mathbf{v}_j}(c, \mathbf{a}')} [\partial f/\partial \mathbf{v}]_{\mathbf{v}_j}} P_{\mathbf{v}_j} [\cos (\pi_i - 0)]; \qquad (14) \text{ and}$$

$$A = -\frac{\pi P}{cb^4} \sum_{j=0}^{\infty} \frac{\varkappa_j \overline{D_{\nu_j}(r, a)} \overline{D_{\nu_j}(b, a')} (2\nu_j + 1)}{\sin \nu_j \pi \cdot \overline{D_{\nu_j}(c, a')} [\partial //\partial \nu]_{\nu_j}} P_{\nu_j} [\cos (\pi - \theta)], \qquad (15)$$

Here, P is the electric moment of the Hertzian dipole. Finally, some particular cases are discussed: 1) H₀ = 0. 2) The Watson problem (G. N. Watson, Proc. Roy. Soc., 95, 546, (1919); 95a, 83 (1918)). 3) The case of a plane waveguide. 4) The case of diffraction. 5) The Sommerfeld case. There are 12 references: 7 Soviet-bloc and 5 non-Soviet-bloc. The references to English-language publications read as follows: H. Bremer, Terrestrial Radiowaves, 1949; T. L. Eckersley, Proc. Roy. Soc., 132, 83 (1931); 136, 499, (1932); 137, 158, (1932); Eckersley, Millington, Phil.

Card 6/7

25308

\$/020/61/138/005/008/025

Solution of the boundary problem

B104/B205

Trans. Roy. Soc., p. 273, 10 VI (1938).

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk

SSSR (Institute of Mathematics imeni V A. Steklov of the

Academy of Sciences USSR)

PRESENTED:

February 2, 1961, by N. N. Bogolyubov, Academician

SUBMITTED:

January 5, 1961

Card 7/7

16,700	(1344)	25476 \$/020/61/139/00 B104/B231	1/008/018			
AUTHOR:	Krasnushkin, P. Ye.	·				
TITLE:	Information theory applied to the problem of propagation of long and superlong circumterrestrial radio waves in the lower layers of the ionosphere (C, D, E)					
PERIODICAL:	Akademiya nauk SSSR. Doklady	, v. 139, no. 1, 1	961, 67 - 70			
TEXT: The so	lution of the boundary value pro	blem	, <u>;</u> X			
	$\{\Phi_i = f_i(\{a_i^c\}_1^N; \{\bar{a}_i^{nc}\}_{N+1}^\infty)\}_{i=1}^N; \{a_i^c\}_{N+1}^\infty\}_{i=1}^N$	$= \int_{1}^{-1} (\{\Phi_{i}\}_{1}^{N}; \ (\overline{a}_{i}^{\text{MC}})_{N+1}^{\infty}))_{i=1}^{N}$	-1ı (1)			
	$D_{i}^{N} = f_{i} (\{a_{i}^{c, N}\}_{1}^{P}; \{a_{i}^{c, S}\}_{P+1}^{N}; \{\overline{a}_{i}^{Nc}\}_{N+1}^{\infty})\}_{i=1}^{R},$	(2)				
provides a functions $\{ {f \varphi}_{f i} \}$	nctional correlation between fic N 1 are parameters that determine	ld and medium. In the essential fea	these			
•	•					

31.5

50

55

ÇÇ)

25476

Information theory applied ...

S/020/61/139/001/008/018 B104/B231

electromagnetic field with regard to the problem under discussion. determine the essential and $\{a_i\}_{N+1}^{\infty}$ the unessential parameters of the medium. Expansion for the latter two parameters leads to the introduction of &-nets in the space of $H_{\overline{q}N}$, $\{ \varphi_i \}_{1}^{N} \in$ Hon, where E defines the accuracy of idealiza-The coordination problem of experimental data $\{ \varphi_i \}_{i=1}^N$ E-net units consists in the superposition of function (1) on the arguments of the probability distribution function $\mathbb{W}_{\text{exp}} \left[\left\{ \Phi \right\}_{1}^{N}, \left\{ \mathbf{a}_{1}^{C} \right\} \right]$ In accordance with the information theory, this leads to gaining an information on field and medium. The method of mixed initial data is employed for approximate coordination. Further highly complicated considerations of the author are based on his two previous papers (DAN, 138, no. 4, (1961); DAN, 138, no. 5, (1961) and deal with methods of finding $\{a_1^{c,x}\}_{p+1}^N$ and $\{\tilde{\phi}_i^x\}_{R+1}^N$ from (1) and (2). For f < 100 kc/sec the parameters $v_{j,k}$ and $v_{j,k}$ of TH_j and TE_k normal Card 2/6

25476 ' 5/020/61/139/001/008/018 B104/B231

Information theory applied...

waves are taken as $\{ \Phi_i \}_{1}^{N}$. This leads to

$$E_{r}(a, 0) \cong \sqrt{\frac{\overline{w}}{\sin 0}} e^{i\frac{\pi}{4}} \left\{ \sum_{j=0}^{n} n_{j}^{2} e^{iv_{j}0} + \sum_{k=1}^{m} n_{k}^{2} e^{iv_{k}0} \right\} B \frac{\mu B}{\mu}, \quad (3)$$

where $n_{j,k} = 0.1829 \cdot 10^{-20} \sqrt{\frac{3}{4}} \lambda (\mathcal{I}/N_{j,k})^{1/2}$, λ denoting the wavelength in kilometers, and W the emitted power in kilowatts. (3) permits $\nu_{j,k}$ and $n_{j,k}$ to be calculated. The results established in the two previous papers as well as present considerations support the conclusion that there is a biunique coordination between $\{\Phi_i\}_1^N$ and $\|\mathcal{E}(\mathbf{r})\|$ in $(\mathbf{a}-\delta_1, \mathbf{a}+\mathbf{h}_0+\delta_2)$ in the accuracy limits of the \mathcal{E} -net. With the aid of formulas worked out previously S. P. Lomnev computed the $\{\mathbf{a}_1^{\mathbf{c},\mathbf{x}}\}_1^R$, which was used for constructing the function $N_{\mathbf{e}}(\mathbf{r})$ shown in Fig. 1 for one summer day in mid-latitudes $(N_{\mathbf{e}}^{\mathcal{E}}(\mathbf{r}))$ and for one night (6-7) hours after sunset) $(N_{\mathbf{e}}^{\mathbf{H}}(\mathbf{r}))$. The computing was done Card 3/6

25476 \$/C20/61/139/001/008/018 B104/B231

Information theory applied ...

by a β -2(M1 (BESM1) computer of the VychisliteIniy tsentr AN SSSR (Computer Center of the AS USSR). The tail of $\widetilde{N}_e^0(r)$ (57 $\langle n \rangle$ 67 km) secures the observable damping of the more remote field for 10 $\langle f \rangle$ 30 kc/sec. The tail concerned is not dependent on the solar angle χ ; it is shifted in the middle of \widetilde{N}_e^0 like log sec χ , and grows with the latitude. This increases damping β_{TH} by a factor of 2.5 - 3. This tail is a stable phenomenon of the ionosphere, and is not related to solar ionization. It is highly probable that it is due to cosmic radiation (as suggested by M. Nicolet). There are 3 figures and 20 references: 11 Soviet-bloc and 9 non-Soviet-bloc. The most important references to English-language publications read as follows: M. Nicolet, Phys. of fluids, 2, 95 (1959; J. Geophys. Res., 65, 1469 (1960). [Abstracter's note: The symbols employed are all taken from the previous papers of the author and papers by M. Nicolet.]

ASSOCIATION:

Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Institute of Mathematics imeni V. A. Steklov, Academy

Card 4/6

Information	theory	applie	d 		•	25476 S/020/61 B104/B23	/135/00 1	1/008/0	18	
•		of Sc	iences USS	SR)		•				
PRESENTED:	•	April	3, 1961,	by N. N.	Bogol	yubov, A	cademic	ian	į	
SUBMITTED:		March	15, 1961				•	•	• :	
										. 1
					•		• .	•	•	•
		•			•				ν	,
		•	•			•	1	•	· · ·	١
Card 5/6	١		. •				•	•	: - }	•
	• • •		e a			••		**** ****,***		

Diurnal and seasonal oscillations of a distant field of long radio waves. Dokl. AN SSSR 14c no.4:783-786 0 '61. (MIRA 14:9)

1. Matematicheskiy institut im. V.A.Steklova AN SSSR. Predstavleno akademikom I.M.Vinogradovym.

(Ionospheric radio wave propagation)

5/020/62/144/002/016/028 B104/B102

AUTHOR:

Krasnushkin, P. Ye.

TTLE:

Theory of terrestrial atmospherics

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 2, 1962, 334-337

TEXT: This review article discusses the results of Russian and non-Russian studies, conducted in the years from 1937 to 1960, on atmospheric disturbances of radio reception. There are 3 figures.

ASSOCFATION: Matematicheskiy institut im. V. A. Steklova Akademii

(Institute of Mathematics imeni V. A. Steklov of the

Academy of Sciences USSR)

FLEGENTED:

December 9, 1961, by I. M. Vinogradov, Academician

SUBMITTED:

December 7, 1961

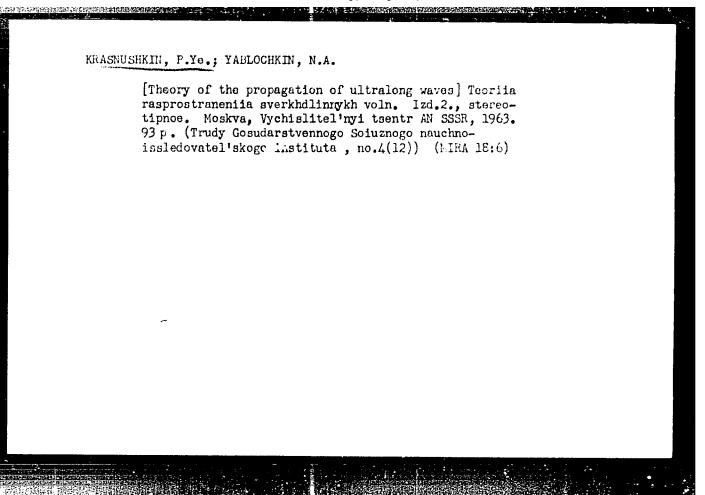
Card 1/1

KRASNUSHKIN, P.Ye.; KOLESNIKOV, N.L.

Exploration of the lower ionosphere by means of long radiowaves using low-frequency radiosondes set up on rockets. Discovery of a new ionospheric layer. Dokl. AN SSSRR 146 no.3:596-599 S *62. (MIRA 15:10)

1. Matematicheskiy institut im. V.A.Steklova AN SSSR. Predstavleno akademikom I.M.Vinogradovym.

(Atmosphere, Upper--Rocket observations)



KRASNUSHKIN, P.Ye.

Generalized normal waves in chain structures. Dokl. AN SSSR 155 no. 5:1042-1045 Ap '64. (MIRA 17:5)

1. Matematicheskiy institut im. V.A.Steklova AN SSSR. Predstavleno akademikom N.N.Bogolyubovym.

L 20286-65 ENT(1)/EEC-L/EWA(h) Peb AFETR/RAEM(e)

ACCESSION NR: AP4049914

5/0020/64/159/003/0528/0531

AUTHORS: Krasnushkin, P. Ye.; Lomnev, S. P.; Tragov, A. G.

TITLE: Method for precision calculations of a periodic sectionalized waveguide

SOURCE: AN SSSR. Doklady*, v. 159, no. 3, 1964, 528-531

TOPIC TAGS: periodic waveguide waveguide calculation, waveguide propagation, normal propagation mode

ABSTRACT: The exact calculation of a periodic sectionalized waveguide is based on the determination of the parameters of a limited number of lowest normal modes propagating in the waveguide, as described elsewhere by one of the authors (Krasnushkin, Radiotekhn, i elektronika, in press). The method consists of writing down the Breisig operator equation of each unit section in the periodic waveguide, and replacing the functional operators in the equation with

Card 1/2

L 20286-65 ACCESSION NR: AP4049914

matrix operators by means of some system of basis functions. The method is illustrated by means of the classical example of propagation of axially symmetric waves in a round diaphragmed waveguide with unit section consisting of a stub of smaller diameter between two stubs of larger diameter. The algebraic equations are solved in this case numerically with an electronic computer accurate to better than 10⁻⁶. This report was presented by I. M. Vinogradov. Orig. art. has: 1 figure, 16 formulas, and 1 table.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematics Institute, Academy of Sciences SSSR)

SUBMITTED: 18Jun64

ENCL: 00

SUB CODE: EC

NR REF SOV: 006

OTHER: 004

Card 2/2

L 41562-65 EWT(1)/EWG(v)/FCC/EEC-4/EEC(t)/EWA(h) Po-4/Pe-5/Pq-4/Pae-2/
Peb/Pi-4 GW

ACCESSION NR: AP5005187 UR/0203/65/005/001/0055/0069

AUTHOR: Krasnushkin, F. Ye.; Kolesnikov, N. L.

FITLE: Investigation of the lower ionosphere by the impedance low-frequency radiosonde method

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 1, 1965, 55-69

TOPIC TAGS: ionosphere, radio wave, radiosonde, electron collision, atmospheric
pressure, aeronomy, electron concentration, upper atmosphere, Langmuir probe,
standard atmosphere

ABSTRACT: A method has been developed for measuring the parameters of the lower
ionosphere. It involves recording the input impedance of a small antenna sensitive

ABSTRACT: A method has been developed for measuring the parameters of the lower ionosphere. It involves recording the input impedance of a small antenna sensitive to changes in the electrical properties of the medium surrounding the antenna. The pole- or T-shaped antenna is mounted on the side surface of a rocket and fed a sinusoidal voltage with a frequency f = 50 kc. The length of the vertical part of the antenna does not exceed 30-50 cm, and the horizontal part of the T-shaped antenna does not exceed 50-60 cm. The antennas are made of copper tubes 1.5 cm in diameter. The method has been named the low-frequency, impedance, radiosonde method,

Card 1/2

L 41562-65 ACCESSION NR: AP5005187

* id its principles are rescribed fully. The method was employed at a frequency of 50 kc for measuring the electron concentration and transport frequency of collision between electrons and neutral molecules in the height range of 55—90 km.

The results agree with those obtained, using long and very long waves, by the differential absorption method and also by high-frequency and Langmuir probes. Transport frequency of collisions was used to determine atmospheric pressure in the height range of 79—90 km. It is shown that the method can be used with a single frequency for measuring vertical N_e(h) profiles in the height range of 50—90 km at any time and v(h) in the range 70—90 km during the daytime. The proposed method for measuring pressure from v_{tr}, in contrast to v_{eff}, is not dependent on frequency and satisfactorily explains the attenuation of radio waves in the lower layers of the ionosphere. A formula is presented making it possible to determine the pressure profile P(h), which, in summer, coincides with an accuracy of up to 5% with the profile of the standard atmosphere. Orig. art. has: 29 formulas and 7 figures.

ASSOCIATION: Matematicheskiy institut imeni V. A. Steklova AN SSSR (Mathematics Institute, AN SSSR)

SUBMITTED: 14Sept64

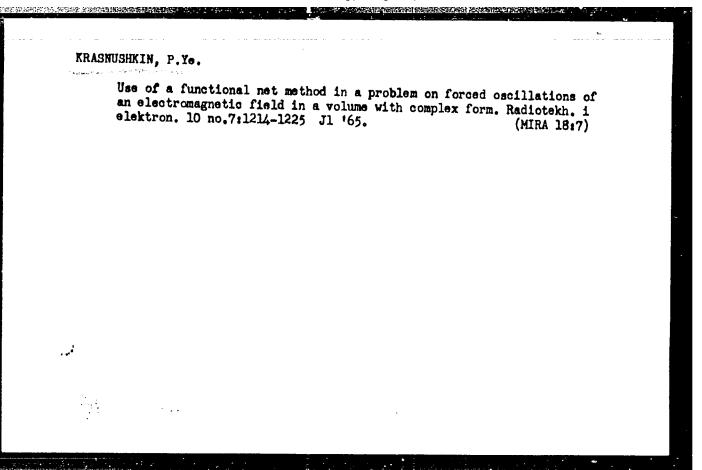
ENCL: 00

SUB CODE: ES, EC

NO REF 80V: 012 Card 2/2 ML OTHER: 020

ATD PRESS:

3226



L 40803-65 EVT(4) LJP(c)

ACCESSIEN NR: AP5007654 S/0020/65/160/006/1285/1288

AUTHORS: Krasnushkin, P. Ic.

TITLE: A method of calculation of a nomuniform iris radio waveguide of finite B

SOURCE: AN SSSR. Dokledy, v. 160, no. 6, 1965, 1285-1288

TOPIC TAGS: waveguide iris, Fourier equation electrodynamic boundary problem

ABSTRACT: Any nonuniform cellular waveguide can be analyzed as a chain of R nonidentical functional cells which transform the amplitude distribution functions of the forced oscillations of the tangential fields $\mathbb{Z}_{q}^{(1)}(q)$ and $\mathbb{H}_{q}^{(1)}(q)$, $q \in \mathbb{S}^{(1)}(q)$ at the inlet apertures $\mathbb{S}^{(1)}(q)$ of the cells to similar functions at the outlet apertures. In order to construct the N-th matrix approximation, these fields are expanded and the basic functions are $\mathbb{E}^{(1,2)}(q)$ k=1 and $\mathbb{E}^{(1,2)}(q)$ k=1, $q \in \mathbb{S}^{(1,2)}(q)$. Having taken N first Fourier coefficients of these expansions as the amplitudes assigned to the N poles of the 1-th cellular multipole, a chain of $\mathbb{E}^{(1,2)}(q)$ in the core of the waveguide. The forced oscillations in the card $\mathbb{E}^{(1,2)}(q)$

L 40803-65 AFS007654

chain in a source-form representation are: $\begin{bmatrix} V(f) \\ I(f) \end{bmatrix} = \begin{bmatrix} I(f,f) & I(f$

L 40803-65 ACCESSION NR: AP5007654

section $S^{(1)}$ (j' + 1) and $\Delta Z = X(0, j' + 1) + Z(R + 1, j' + 1) - 2, (j') is$ obtained from (3) by interchange of the O and R . 1 points, With the introduction of Z1 and Z2, the pathological proparties of the Brasieg matrix at N - 00 are decontaminated and the boundary conditions for (1) are automatically fulfilled. (1) is true for random cells with matrices A (j') having inverses A-1 (j') and for any frequency (ω , beside the resonance ($\omega_{\rm B}$, determined from $|\Delta z| = 0$, the roots of which are independent of j'. For arbitrary calls (1) is expanded in generalized normal waves of rank 2 H. Waves of lesser rank may appear with identical elements, and when all Λ (j) are equal and Z_1 and Z_2 commute, an expansion is obtained in ordinary normal ways of rank 1. A calculation was made of an axisymmetric forced oscillation of type TH of a nonuniform iris waveguide of a circular cross section. When all by = b it can be represented by a chain of cells of two sorts; symmetrical cells with an iris and cells with an iris which are represented by sections of a cylindrical tube. The basic functions of the normal TH waves are expressed by first-order Bessel functions which are described on the basis of a Brasieg matrix which, in turn, depends on the wave number and Kronecker symbol. The components of the vectors of the electrical field coincide with the first boundary problem of electrodynamics. The symmetry force and the cellular identity affect the solution, and in one case the problem is a modification of the dispersion Card 3/4

L 40803-65
ACCESSION NRs AP5007654 equation of a uniform cellular waveguide. Orig. art. bass 1 figure and 12 equations.
ASSOCIATION: Matematichesky institut im. V. A. Steklova Akademii nauk SSSR (Mathematical Institute, Academy of Sciences SSSR)
SUBLITITED: 31Aug6li ENCL: 00 SUB CODE: E. MA NO REF SOV: COL OTHER: COO
Card In

43159-66 EWT(1)/FCC SOURCE CODE: UR/0203/66/006/003/0602/0604 AP6018929 ACC NRI AUTHOR: Krasnushkin, P. Ye. ORG: Mathematical Institute im. V. A. Steklov, AN SSSR (Matematicheskiy institut AN SSSR) TITLE: Effect of solar wind on the C layer of the Earth's ionosphere SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 3, 1966, 602-604 TOPIC TAGS: solar wind, ionospheric radio wave, primary cosmic ray, solar activity magnetic storm ABSTRACT: According to current concepts, an inverse correlation should exist between solar wind variations and the electron concentration in the C layer of the ionosphere. The author confirms this assumption by carrying out an approximate calculation of eleven-year variations of the distant diurnal field of ultralong radio waves propagated around the earth. The calculations are based on data on the modulation of pri mary cosmic rays by the solar activity. The causes of a brief intensification of the distant diurnal field of ultralong waves, observed approximately one day after a major solar flare associated with a magnetic storm, are also explained by this calculations. It is noted that the discussed phenomena of modulation of ultralong waves by the solid wind may be partially masked by effects taking place during solar flares, such as hard x-ray radiation of 1-10 A. Orig. art. has: 1 figure. SUB CODE: 04,03/SUBM DATE: 11Nov65/ ORIG REF: 002/ OTH REF: 007 550.338.2 UDC: MLP Card

EWT(1) L 07087-67 ACC NR: AP6018996

SOURCE CODE: UR/0109/66/011/006/1051/1065

AUTHOR: Krasnushkin, P. Ye.: Lonmey, S. P.

ORG: none

TITLE: Methods for exact calculation of uniform periodic waveguides 15

SOURCE: Radiotekhnika i elektronika, v. 11, no. 6, 1966, 1051-1065

TOPIC TAGS: waveguide, periodic waveguide, wave 60108 PROPAGATION, DIGITAL COMPOTER SYSTEM ABSTRACT: Calculation of a periodic bead-shaped waveguide consisting of short lengths of cylinders on a digital computer is considered. Known methods of calculating wave numbers and normal-wave shapes are classified into two groups:

(A) Those based on solving this equation: $A \parallel \frac{E_{\tau}(q)}{H_{\tau}(q)} \parallel = \lambda \parallel \frac{E_{\tau}(q)}{H_{\tau}(q)} \parallel$; in these methods,

the frequency ω represents a parameter in the operator A; hence, the dispersion takes the form: $\psi_l(\omega, q, b, c, ...)$. and (B) Those based on z-periodicity condition:

$$\left\|\frac{E_{\tau^{(l)}}(q,\omega)}{H_{\tau^{(l)}}(q,\omega)}\right\|_{r_{\text{mx}}} = e^{-i\phi_l} \left\|\frac{E_{\tau^{(l)}}(q,\omega)}{H_{\tau^{(l)}}(q,\omega)}\right\|_{r_{\text{max}}=r_{\text{mx}}+D}, \text{ where z is the input coordinate of any}$$

Card 1/2

UDC: 621.372.8.001.24

L 07087--67

ACC NR: AP6018996

"bead." Neither of the above groups can be economically used. Therefore, a combination method (C) is suggested which consists of two steps: (1) An analytical step partitioning the "bead" into several regions separated by interfaces; by solving the first boundary problem for each region, a functional relation,

 $\{H_j^{(i)}\}_{j\to 1}^n = (Y_{jh}^{(i)}) \{E_h^{(i)}\}_{h=1}^n$, can be established; here, $H_j^{(i)}$ and $E_j^{(i)}$ are the

functions of distribution of tangential components of fields H_{τ} and E_{τ} over the j-th surface of the region; the above field components are joined at the interfaces of the regions; (2) A computer step which includes truncation of corresponding matrices (scalar products) and calculating them on a digital computer. A modern computer can calculate dispersion curves $\cos \psi_{\ell}$ -f quicker than these curves can be measured (difficulties of isolating modes at higher frequencies). Orig. art. has: 4 figures, 16 formulas, and 5 tables.

SUB CODE: 09 / SUBM DATE: 30Dec64 / ORIG REF: 018 / OTH REF: 010

Card 2/2 2C

ACC NR: AP6036754

SOURCE CODE: UR/0020/66/171/001/0061/0064

AUTHOR: Krasnushkin, P. Ye.

ORG: Mathematics Institute im. V. A. Steklov, Academy of Sciences SSSR (Matematicheskiy institut Akademii nauk SSSR)

TITLE: Method of solving the general boundary value problem of the propagation of long and super long radio waves around the earth

SOURCE: AN SSSR. Doklady, v. 171, no. 1, 1966, 61-64

TOPIC TAGS: boundary value problem, radio wave propagation, vlf propagation, ionospheric radio wave, atmospheric electromagnetic effect, approximate solution

ABSTRACT: The problem solved is that of finding the amplitudes of the electric and the magnetic fields produced by a Hertz dipole in an unbounded medium described by Maxwell's equations (in spherical coordinates), having a variable dielectric tensor, and divided into three regions — the earth, the atmosphere, and the ionosphere. The problems formulated in an approximate differential—operator formulation and is solved by the method of coupled lines, described by the author in his doctoral dissertation (MGU, 1945). The solution is obtained in the form of a sum of modulated normal modes. A method of determining the wave numbers of the modes, suitable for computer solution, is described. The final approximate solution for the boundary value problem is ob-

Card 1/2

UDC: 538.566

ACC NR. AP6036754

tained from the calculated wave numbers and radiation admittances of the different regions. This report was presented by Academician I. M. Vinogradov 18 January 1966. Orig. art. has: 16 formulas.

SUB CODE: 20 , 12/ SUBM DATE: 27Dec65/ ORIG REF: 005/ OTH REF: 007

Card 2/2

ACC NRI AP6036843

SOURCE CODE: UR/0020/66/171/002/0340/0343

AUTHOR: Krasnushkin, P. Ye.; Baybulatov, R. B.

ORG: Mathematics Institute im. V. A. Steklov, Academy of Sciences SSSR (Matematicheskiy institut Akademii nauk SSSR)

TITLE: On the violation of reciprocity principle in daytime propagation of superlong radio waves around the earth

SOURCE: AN SSSR. Doklady, v. 171, no. 2, 1966, 340-343

TOPIC TAGS: radio wave propagation, vlf propagation, waveguide propagation, earth magnetic field, ionospheric radio wave

ABSTRACT: The authors coulain a phenomenon, which they call the valve effect, and which consists in the fact that the attenuation of superlong waves on paths from east to west is larger than in the opposite direction, especially during daytime propagation near the geomagnetic equator. Although this phenomenon has not been taken into account in the existing waveguide theory of superlong waves, it is shown that allowance for the valve effect can be made by using a method developed by one of the authors earlier (Krasnushkin, DAN v. 171, no. 1, 1966). This method is used to calculate the impedances contained in the equation for the wave numbers of the normal waves, with account taken not only of the vertical component of the earth's magnetic

Card 1/2

UDC: 538.566

	6036843	Name and a	components alo	ong and aci	oss the prop	agation path.
is shown calculat	that the p	arameters of ficient accur	TH waves for cacy by means	of the der	ived impedan	ce equations.
lly com	outed for TH	waves with	two types or	profites (re effect is	attenuated by
C layer	of the ion	osphere, which	h is produced	ald. The	bsence of th	y the decrease e C layer in the has: 3 figures
6 form	ilas.				1	
CODE:	09/ BUBM D)ATE: 27Dec6	orig ref:	004/ OT	i REF: 010	
	•			•		
1					•	
•		/				
•		,				
•		/				
					•	<u>.</u>
•		. /				

ACC NR: AP7669193

SOURCE CODE: UR/0203/66/006/006/1051/1060

AUTHOR: Baybulatov, R. B.; Krasnushkin P. Ye

ORG: Mathematics Institute im. V. A. Steklov, AN SSSR (Matematicheskiy institut AN

SSSR) . .

TITLE: Determination of the daylight profile of electron concentration of C and Dlayers of the ionosphere as determined from very long wave fields and atmospheric

pressure profiles

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 6, 1966, 1051-1060

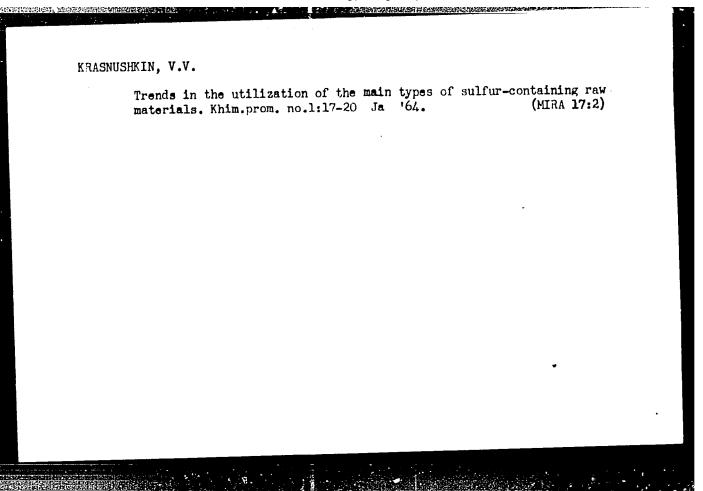
TOPIC TAGS: ionospheric electron density, ionospheric radio wave

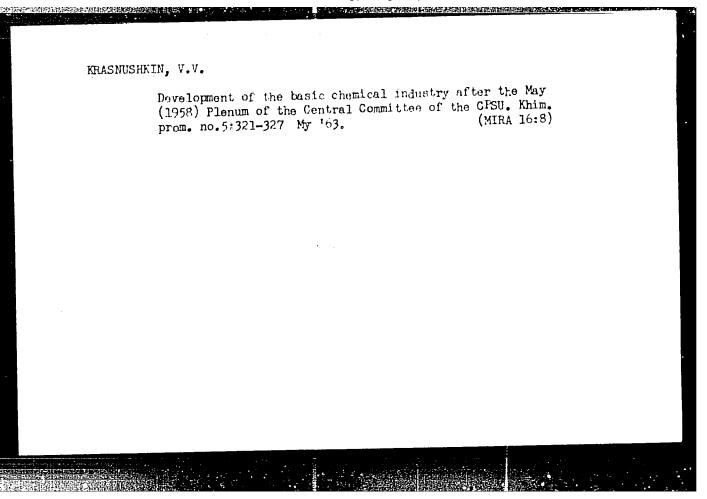
ABSTRACT: A method optimizing the correlations between low frequency radio waves and ionospheric properties is described. Review of present status of predictions of the electron concentration profiles in the ionosphere is given, showing the weaknesses of present methods. To improve the accuracy of the electron concentration and collision-frequency-of-electrons profiles, use of more accurate data is made. The resulting problem requires very long computation runs due to the large number of iterative steps required. This approach is simplified by recourse to a computational method called the "optimization method" as outlined by Bellman. An example of the summer profile (for temperature latitudes) of the ionosphere consisting of two sub-

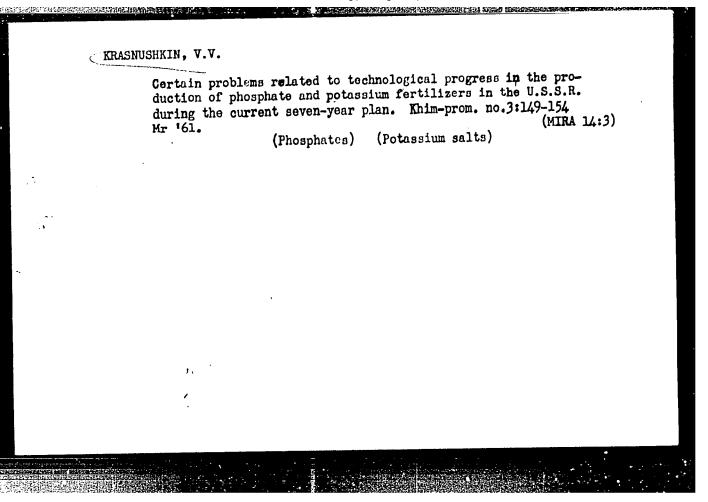
UDC: 550.388.2

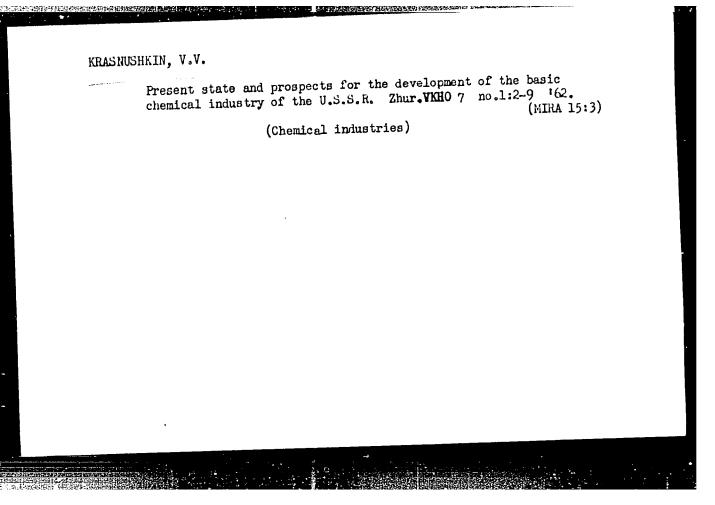
Card 1/2

AC	C NR: A	P7002193						i due To
ins Sev	sufficie veral pr	nt data, al ofiles are	the present though appropriate for settlese paramidentified.	ts of parame	ters that ha	ve been	tabulated in	n the most cri-
SUI	B CODE:	04,201	SUBM DATE:		ORIG REF:		OTH REF:	015
				•				
		•						
•								-
								<u> </u>
				•				
	Card 2/2		 					!









SMYSLOV, N.I.; SIPYAGINA, M.I.; KRASNUSHKIN, V.V.; LEVIN, M.N.

[Combined contact-tower process for sulfuric acid manufacture] Kombinirovannyi kontaktno-bashennyi protsess poluchenia sernoi kisloty. Moskva, 1962. 39 p. (MIRA 16:2)

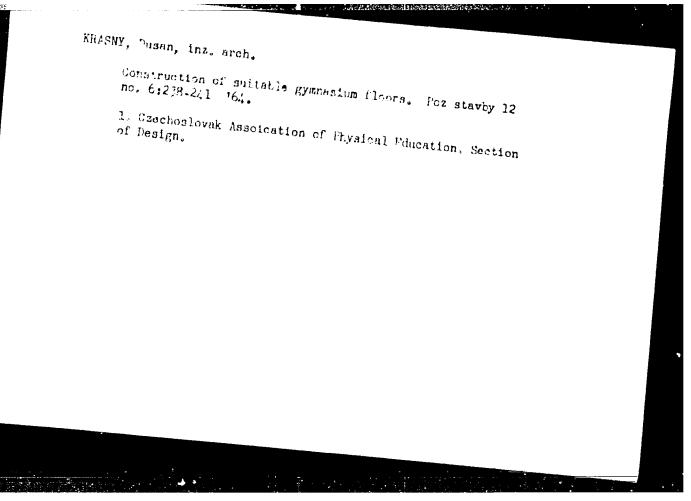
1. Moscow. Nauchnyy institut po udobreniyam i insektofungisidam. 2. Laboratoriya bashennoy sernoy kisloty Nauchnogo instituta po udobreniyam i insektofungitsidam imeni prof. Ya.V.Samoylova (for Smyslov, Sipyagina). 3. Gosudarstvennyy institut po proyektirovaniyu zavodov osnovnoy khimicheskoy promyshlennosti (for Krasnushkin, Levin).

(Sulfuric acid)

KRASMUSHKIN, Tevgeniy Konstantinovich, prof., zasluzhennyy deyatel'
nauki [decessed]; BANSHCHIKOV, V.M., red.; ZINOV'IEV, P.M., red.;
KRASMUSHKINA, M.A., red.; GUREVICH, L.A., tekhn.red.

[Selected works] Izbrannye trudy. Moskva, Gos.izd-vo med.lit-ry,
Medgiz, 1960. 607 p. (MIRA 13:11)

(PSYCHIATRY)



Late postraumatic palsy of the ulnar nerve; treatment by anterior transposition. Acta chir. orthop. traum. cech. 18 no.2:41-47 1951. (CIML 20:9) 1. Of the Orthopedic Department of the State University Hospital at Pilsen (Head—Docent Dusan Polivka, M.D.).

```
KRASNY, Frantisek, As., Dr.

Symovioplastic sarcoma localized in knee joint region,
Acta chir. orthop. traum. cech. 24 no.3:249-252 May $7.

1. Orthopedicak klinika v Plzni, prednosta doc. Dr. D. Polivka.

(SYNOVIOMA, case reports
knee, surg. (Cs))

(KNEE, neoplasms
synovioma, surg. (Cz))
```